

Section II. (Remarks)

Allowance of Claims 32 and 33, and Indicated Allowability of Claims 2 and 9 If Rewritten

At page 12, paragraph 37 of the November 18, 2004 Office Action, the Examiner allowed claims 32 and 33. Such action is acknowledged.

At page 12, paragraph 38 of the November 18, 2004 Office Action, the Examiner objected to claims 2 and 9 as depending from a rejected base claim, but indicated that such claims would be allowable if rewritten in independent form including all limitations of the base and any intervening claims.

In response, claims 2 and 9 have been rewritten in independent form, and are now in form and condition for allowance.

Rejection of Claim 34 under 35 USC §112, First Paragraph

At page 2, paragraph 2 of the November 18, 2004 Office Action, claim 34 was rejected under 35 USC §112, first paragraph as failing to comply with the enablement requirement, based on the recital therein that "the applied sealant composition is non-capillary active." The Examiner's stated reason for such rejection was that applicant has not disclosed that the sealant composition lacks any surface tension whatsoever, and that would be the only way to achieve non-capillary action, hence the recital is not enabled.

The Examiner's attention in this respect is directed to the text of applicant's last-filed response (August 13, 2004 Amendment, page 9, stating that:

"New claim 34 has been added, of dependent form of claim 1, to recite that the applied sealant composition is non-capillary active, consistent with the disclosure at page 10, lines 17-21 of the specification."

Referring now to the referenced text of the specification, page 10, lines 17-21 of the application state that:

"Viscosity of the sealant formulations in the broad practice of the invention can be at any suitable level consistent with effective usage

of the sealant formulation. In general, the viscosity should not be so low as to allow the sealant liquid to penetrate through the projectile/casing interface into the interior casing compartment by capillary action, and the viscosity should not be so high as to make application of the sealant to the joint of the ammunition article impractical."

It therefore is abundantly clear that "non-capillary active" in reference to the applied sealant means that the sealant does not penetrate into the interior casing compartment by capillary action.

It also is apparent that an applied sealant that does penetrate into the interior casing compartment by capillary action is "capillary active."

The law requires the Examiner to determine "whether those skilled in the art would understand what is claimed when the claim is read in light of the specification." *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986). The relevant specification in the present application discusses capillary action (eg., in the passage quoted above) as well as the ability of the person of skill in the art to select a given sealant in the practice of the invention:

"The choice of a given viscosity for a particular formulation may be readily made on the basis of simple experiment varying the viscosity by adjustment of the relative proportions of the ingredients of the formulation and determining the suitability of the formulation for the selected application technique, and the capillarity and sealing action of the formulation at the projectile/casing interface."

Page 10, lines 22-26 of the instant application.

There is no infirmity in claim 34, since it is clear what is being claimed when the claim is read in light of the specification. The Examiner has attacked claim 34 by citing a formula for the height of a liquid column, which has no relevance to the sense and meaning of the language of the claim. This is not a proper basis for rejecting the claim. As the court said in *In re Wright*, 999 F.2d 1557, 1561-1562, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993):

"When rejecting a claim under the enablement requirement of section 112, the PTO bears an initial burden of setting forth a reasonable explanation as to why it believes that the scope of protection provided by that claim is not adequately enabled by the description of the invention provided in the specification of the application; this includes, of course, providing sufficient reasons for

doubting any assertions in the specification as to the scope of enablement.”

Here the Examiner has simply given a mathematical formula for the height of a liquid column, $h = (2T \cos \theta) / (\rho g r)$, as the basis of rejection, rather than looking to the claim itself and applicant's own specification to discern the sense of the claim, with the result that an improper rejection of the claim has been made.

This impropriety in the rejection of claim 34 is further evidenced by the fact that the Examiner has allowed claim 32, containing corresponding language (viz., reciting that the sealant “is not capillary active at the joint”), without any objection to the claim language of such allowed claim.

Thus, claim 34, which depends from claim 1, recites “the applied sealant composition,” having antecedent reference to claim 1, which recites “...applying to the joint a sealingly effective amount of a light-curable composition.” The “applied sealant composition” of claim 34 therefore is at the “joint between the projectile and the casing” as recited in claim 1, and such sealant is non-capillary active at such joint – this is the plain meaning of claim 34, and the meaning that necessarily follows from the dependence of claim 34 on claim 1.

For this reason, there is no enablement issue presented by the language of claim 34 and such claim in fact fully satisfies the requirements of 35 USC §112, first paragraph. Claim 34 therefore merits the same disposition as the Examiner has accorded the correspondingly worded claim 32, namely, allowance.

Rejection of Claims on Reference Grounds and Traversal Thereof

In the November 18, 2004 Office Action, claims 1, 3-8 and 10-31 were rejected on reference grounds, including:

a rejection of claims 1, 4-8, 10-15, 24 and 29-31 under 35 USC § 103 as unpatentable over U.S. Statutory Invention Registration H1350 to Desmond et al. (“Desmond”) in view of U.S. Patent Application Publication No. 2004/0069177 to Klein (“Klein”);

a rejection of claim 3 as unpatentable under 35 USC § 103 over Desmond in view of Klein in view of U.S. Patent 4,359,370 to De La Mare et al. (“De La Mare”);

a rejection of claims 16-23 and 25-28 under 35 USC § 103 as unpatentable over Desmond in view of Klein in view of U.S. Patent 6,284,813 to Leppard ("Leppard"); and

a rejection of claim 26 under 35 USC § 103 as unpatentable over Desmond in view of Klein in view of U.S. Patent 6,017,973 to Tamura et al. ("Tamura").

The foregoing rejection of the claims is traversed and reconsideration of the patentability of claims 1, 3-8 and 10-31 is requested, in light of the ensuing remarks.

Remarks Concerning Patentable Distinction of Claims 1, 3-8 and 10-31 Over the Cited References

Claims 1, 4-8, 10-15, 24 and 29-31 have been rejected under 35 USC § 103 over Desmond in view of Klein.

Desmond has been cited in the statement of rejection at page 3 of the Office Action as disclosing

"the invention substantially as claimed including: a process for manufacturing an ammunition article comprising providing a cartridge 20 including a projectile disposed in a casing, as seen in FIGS. 9-15, for example, and presenting a joint between the projectile and the casing; and applying to the joint a sealingly effective amount of sealant composition, see Title, Abstract, etc."

(November 18, 2004 Office Action, page 3, lines 4-8).

The Examiner then concedes that

"[H]owever, Desmond does not disclose the sealant being a light-curable sealant and exposing the applied sealant being a light-curable sealant and exposing the applied sealant composition to curingly effective light."

(November 18, 2004 Office Action, page 3, lines 8-10).

In fact, Desmond is highly specific about the nature and composition of sealants useful in the method described in such reference, wherein a flechette cartridge or other ammunition article is coated by lowering through an integral lid of a container wherein the sealant is applied, and then the coated article

is withdrawn through a diaphragm that "acts as a squeegee and removes all of the excess sealant which may have collected" (column 7, lines 2-4 of Desmond). The sealant is described at column 6, lines 61-63 of Desmond:

"Preferably, for the sealant, cellulose nitrate and asphalt sealants are used for coating a 5.56 mm flechette cartridge." (Desmond, column 6, lines 61-63).

Cellulose nitrate and asphalt sealants are traditional sealants. See, for example, the instant application at page 3, lines 3-4:

"The traditional technique for sealing small-caliber ammunition has been application of an asphalt-based sealant" (present application, page 3, lines 3-4).

The use of cellulose nitrate and asphalt sealants is the ONLY teaching in Desmond concerning the composition of the sealant used in Desmond's coating operation. Desmond teaches that his disclosed coating operation is highly efficient and produces superior results – see, for example, Desmond at column 3, lines 55-56 ("a thin, pore-free uniform coating of a specific thickness is easily obtained") and column 3, lines 61-62 ("the process is quick and well-suited to high volume, high speed production line environments").

There is thus in Desmond no suggestion or motivation of using any sealant other than cellulose nitrate and asphalt sealants. Moreover, Desmond's specific teachings beg the ultimate question:

Why would one of skill in the art, on reading Desmond, seek to alter a processing operation that is "quick and well-suited to high volume, high speed production line environments" and "easily" produces "a thin, pore-free uniform coating of a specific thickness," particularly when such effectiveness and superior results are achieved with traditional cellulose nitrate and asphalt sealants?

The Examiner answers this question with his conclusory statement that "[I]t would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Desmond to include the sealant technology as taught by Klein *in order to seal a joint*" (emphasis added).

In fact, there is NO motivation in Desmond for such modification – no motivation whatsoever for discarding the sealant composition specifically taught by Desmond to yield highly effective and superior

results and to nonetheless replace it with some other sealant technology. The Examiner has expressly stated that the motivation for such modification is "in order to seal a joint," but this does not make any logical sense unless there is an apparent inability to seal a joint in the Desmond process that would be readily perceived by the skilled artisan and motivate that skilled individual to alter Desmond's process in order to remedy such sealing deficiency.

Such "motivational circumstance," however, is not in any way present in Desmond, and in fact Desmond teaches away from any such modification by his disclosure in the Summary of the Invention section of his patent, at column 2, lines 40-50:

"The present invention provides a coating device and method for application of sealant coatings to ammunition. Provided is a mechanically simple and effective way of weatherproofing or coating high volumes of small caliber sabot ammunition or similar items. The advantages of this invention are the simplicity of the operation, the effect of pressing or stamping the sealant into the sabot seams where it is most needed, good quality control, and the high success rate of the operation."

(emphasis added; Desmond, column 2, lines 40-50).

Thus, not only does Desmond "seal a joint" but he does so in a way that is "mechanically simple and effective" and achieves "good quality control" and "high success rate."

There is accordingly NO derivative basis in Desmond for altering its teachings to replace the coating and seal that is "effective," and yields "good quality" and "success" with some other coating/sealant medium.

It is fundamental patent law that that must be some motivation, suggestion or teaching in the cited references for making the specific combination that was made by applicant. In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998). In re Fine, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988).

Here there is no motivation, no suggestion, and no teaching for altering the Desmond processing in the manner urged by the Examiner. Contrariwise, Desmond teaches away from any such alteration, by promoting the effective and superior results of his processing. For this reason alone, the rejection of claims based on Desmond in combination with other references should be reversed.

However, there is further basis for rejecting the Examiner's hypothetical modification of the references, which is that Klein does not contain any teaching or suggestion of the steps recited in applicant's broad claim 1 of:

- “(a) providing a cartridge including a projectile disposed in a casing and presenting a joint between the projectile and the casing;
- (b) applying to the joint a sealingly effective amount of a light-curable sealant composition; and
- (c) exposing the applied sealant composition to curingly effective light”

or of the article recited in applicant's broad claim 31:

31. An ammunition article including a projectile mounted in a cartridge casing presenting a projectile/casing interface, with the interface sealed by a light-cured sealant composition

for the reason that the adhesive cited by the Examiner in Klein is used only to provide a seal on a propellant charge, and NOT in any way between a projectile and a casing, as required in applicant's invention.

This is evident from consideration of Klein's disclosure, e.g., as considered in respect of the illustrative FIG. 5 drawing of such reference, reproduced below for ease of discussion

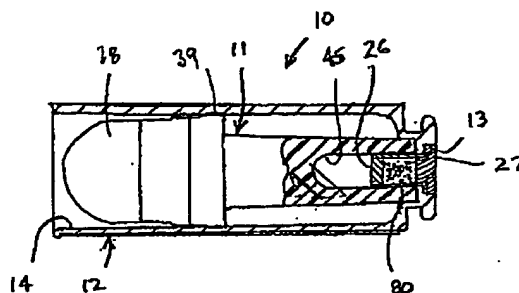


FIG. 5

The adhesive in Klein's ammunition article is denoted by reference number 26, and forms a "plug" over the propellant charge 27. Klein discloses the sealing of such propellant charge in paragraphs [0030] and [0031] of the reference:

[0030] In sealing the propellant a sufficient quantity of the adhesive mixture 26 is deposited over the propellant charge 27 and thereafter is exposed to an energy source, such as an ultraviolet light lamp, which initiates the cross linking reaction thereby forming the polymeric adhesive seal over the propellant. Ordinarily, an exposure time of about 5 to 15 seconds is needed to effectuate the appropriate seal.

[0031] After the seal is emplaced, the cartridge 80 is inserted into and seals the orifice 13 formed in the end wall of the shell casing 12. The rearward leg 16 or insertion end 29 of the projectile body 15 is inserted into the shell casing 12, the cavity 45 thereof positioned in enclosing relationship about the cartridge 80, and the end 29 of the leg 16 positioned at the end wall of the shell casing.

Thus, it is clear that in Klein, the adhesive is deposited directly over a mass of propellant in a cartridge in the first instance, and that the adhesive is light-cured.

Then, only AFTER the adhesive has sealed over the propellant, is the sealed cartridge 80 of propellant (e.g., gunpowder and primer) inserted into the back end of the shell casing 12, and only then is the ammunition projectile 11 inserted into the shell casing 12 so that the rear cavity of the projectile 11 engages the already-sealed cartridge 80 of propellant. In this arrangement, there is only a mechanical engagement of the projectile 11 with the shell casing 12 (at collar 39), and only a mechanical engagement of projectile 11 with the gunpowder and primer cartridge 80.

In Klein there is NO adhesive-sealed "joint between the projectile and the casing" and there is NO adhesive-sealed "projectile/casing interface" as in applicant's claimed invention.

Thus, because Klein merely "press-fits" or "compression-fits" the projectile to the casing at collar 39 of the projectile (such collar being described by Klein in paragraph [0034] as "a tapered circumferential surface wall 41 and a flat annular land or shoulder or check line extension 43") without any adhesive whatsoever, Klein fails to provide any derivative basis for applicant's invention, and moreover, is properly regarded as teaching away from applicant's invention by Klein's use of only mechanical engagement between the projectile and casing.

For these reasons, claims 1, 4-8, 10-15, 24 and 29-31 are fully patentable under 35 USC § 103 over Desmond in view of Klein¹.

Concerning the rejection of claim 3 based on Desmond in view of Klein in view of De La Mare, the Examiner has conceded that Desmond in view of Klein does not disclose light-curable sealant ~~being~~ light-cured by exposure to curingly effective light for an exposure time in a range of from about 0.01 to 0.5 second, but contends that it would be obvious to modify Desmond in view of Klein to include the exposure time taught by De La Mare in order to cure UV curable sealant compositions.

Claim 3 is dependent from claim 1 and is patentable over the art for the same reasons as advanced in support of the patentability of claim 1, since De La Mare does not overcome the deficiencies of the combination of Desmond in view of Klein.

As pointed out hereinabove, the combination of Desmond in view of Klein is fatally deficient in respect of the applicant's claimed invention, inasmuch as Desmond uncontrovertibly teaches the use of cellulose nitrate and asphalt sealants, and Klein seals the projectile/casing interface by mechanical engagement only.

Therefore, the Examiner's suggestion to use UV exposure time of 0.001 to 2.5 seconds in Desmond in view of Klein would have no effect, since only cellulose nitrate or asphalt would be present at the projectile/casing interface.

This fact merely points up the lack of any tenable basis in the Desmond + Klein + De La Mare combination for the applicant's claimed invention.

Claim 3 therefore is patentable over Desmond in view of Klein in view of De La Mare.

Concerning the rejection of claims 16-23 and 25-28 based on Desmond in view of Klein in view of Leppard, all of claims 16-23 and 25-28 depend directly from independent claim 1 and are correspondingly patentable for the same reasons as discussed hereinabove in respect of the patentable character of claim 1 over Desmond in view of Klein.

¹ Such clear and compelling basis of patentability of claims 1, 4-8, 10-15, 24 and 29-31 obviates the necessity of addressing the Examiner's discussion of ancillary features of applicant's various dependent claims in paragraphs 7-22 of the Office Action, it being noted that dependent claims 4-8, 10-15, 24 and 29-30 are patentably distinguished over Desmond in view of Klein for the same reasons as advanced hereinabove in support of the patentability of independent claims 1 and 31.

Leppard has been cited as teaching photocurable resins and mixtures of such resins with photoinitiators, the Examiner contending that it would have been obvious to modify Desmond in view of Klein to **include** the light-curable sealant composition comprising the photocurable resins and photoinitiators of **Leppard** "in order to make a photo-initiator and photo-initiator mixtures capable of curing photopolymerizable compositions efficiently."

As pointed out hereinabove, the combination of Desmond in view of Klein is fatally deficient in respect of the applicant's claimed invention, inasmuch as Desmond uncontrovertibly teaches the use of cellulose nitrate and asphalt sealants, and Klein seals the projectile/casing interface by mechanical engagement only.

The use of cellulose nitrate and asphalt sealants is the ONLY teaching in Desmond concerning the composition of the sealant used in Desmond's coating operation. Desmond teaches that his disclosed coating operation is highly efficient and produces superior results – see, for example, Desmond at column 3, lines 55-56 ("a thin, pore-free uniform coating of a specific thickness is easily obtained") and column 3, lines 61-62 ("the process is quick and well-suited to high volume, high speed production line environments").

There is thus in Desmond no suggestion or motivation of using any sealant other than cellulose nitrate and asphalt sealants, and an absence of any basis for arbitrarily discarding such cellulose nitrate or asphalt sealants in favor of other sealant media, since Desmond teaches a sealant that is "effective," and yields "good quality" and "success."

Accordingly, Leppard provides no tenable basis for rejection of applicant's claims 16-23 and 25-28, and such claims correspondingly are patentable over the art and in form and condition for allowance.

Concerning the rejection of claim 26 based on Desmond in view of Klein in view of Tamura, claim 26 is of dependent form under claim 1 and therefore is correspondingly patentable for the same reasons advanced above in support of patentability of the claim 1 process.

Tamura discloses a photocurable resin composition useful for vacuum-casting molding of shaped objects, and has been cited for specific teachings of viscosity.

As pointed out hereinabove, the combination of Desmond in view of Klein is fatally deficient in respect of the applicant's claimed invention, inasmuch as Desmond uncontrovertibly teaches the use of cellulose nitrate and asphalt sealants, and Klein seals the projectile/casing interface by mechanical engagement only.

Therefore, the Examiner's suggestion to use sealant viscosity from Tamura in a range of from about 100 to 100,000 centipoise (25°C) in Desmond in view of Klein would not alter the fact that only cellulose nitrate or asphalt would be present at the projectile/casing interface in the resultant combination.

This fact underscores the lack of any tenable basis in the Desmond in view of Klein in view of Tamura combination for the applicant's claimed invention.

Claim 26 therefore is patentable over Desmond in view of Klein in view of Tamura.

Fee Payable for Rewriting of Claims 2 and 9 In Independent Form

The rewriting of claims 2 and 9 in independent form herein, increases the number of independent claims by 2 beyond the number for which payment previously was made, thereby necessitating an added claims fee payment of \$200.00 under 37 CFR § 1.16 (h).

A Credit Card Authorization Form authorizing charging in the amount of \$200.00 is enclosed in payment of such added claims fee. Authorization is hereby given to charge any additional fee or amount that may be properly payable in connection with the filing of this response to the November 18, 2004 Office Action, to Deposit Account Number 08-3284 of Intellectual Property/Technology Law.

CONCLUSION

For all the foregoing reasons, claims 1-34 as now pending in the application are patentably demarcated over the cited references, and in form and condition for allowance. The Examiner is therefore requested to reconsider the claims in light of the foregoing, and to responsively issue a Notice of Allowance for the application.

If any remaining issues exist, the Examiner is requested to contact the undersigned attorney at (919) 419-9350.

Respectfully submitted,



Steven J. Hultquist
Reg. No. 28,021
Attorney for Applicant

**INTELLECTUAL PROPERTY/
TECHNOLOGY LAW**
Telephone: (919) 419-9350
Fax: (919) 419-9354
Attorney Ref: 4224-101

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